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Brig Barnum Elliott

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ROPES & GRAY LLP

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NGUYEN, TUAN HOANG

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/786,288	Applicant(s) ELLIOTT, BRIG BARNUM	
	Examiner TUAN H. NGUYEN	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-16,20-31 and 34-38 is/are pending in the application.
- 4a) Of the above claim(s) 3,32 and 33 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-19 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-16,20-31 and 34-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response To Arguments

1. Applicant's arguments, see applicant's remarks, filed on 12/31/2007, with respect to the rejection(s) of claim(s) 1-2, 4-31, and 34-38 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 12/03/2007 and 12/31/2007 has been considered by Examiner and made of record in the application file.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 8-11, 15-16, 20, 24, 26-27, 34, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell, Jr. (US PAT. 6,745,027 hereinafter,

“Twitchell”) in view of Bender et al. (U.S PAT. 7,058,031 hereinafter, “Bender”) and further in view of Bernhardt et al. (U.S PAT. 5,710,975 hereinafter, “Bernhardt”).

Consider claims 1 and 34, Twitchell teaches for a given node to join an ad hoc network of a plurality of energy-conserving nodes, comprising: transmitting a wake-up signal (col. 3 lines 1-12).

Twitchell does not explicitly show that receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network; and joining the network using the information.

In the same field of endeavor, Bender teaches receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network (fig. 7 col. 5 line 48 through col. 6 line 11); and joining the network using the information (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network; and joining the network using the information, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open connection, and allocating, to the user,

communication resources corresponding to resources released based on releasing the selected open connection.

Twitchell and Bender in combination, fail to teach receiving the message further comprises: powering on a main transceiver; waiting to receive the message from the one of the energy-conserving nodes, and receiving the message from the one of the energy-conserving nodes, and receiving the message from the one of the energy-conserving nodes, the message including information regarding a time when at least one node of the energy-conserving nodes is available to receive messages.

However, Bernhardt teaches receiving the message further comprises: powering on a main transceiver (col. 1 line 57 through col. 2 line 2); waiting to receive the message from the one of the energy-conserving nodes, and receiving the message from the one of the energy-conserving nodes (col. 2 lines 56-67), and receiving the message from the one of the energy-conserving nodes, the message including information regarding a time when at least one node of the energy-conserving nodes is available to receive messages (col. 3 lines 1-12).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bernhardt into view of Twitchell and Bender, in order to improve the battery life of battery-powered message receivers such as pagers.

Consider claim 2, Twitchell further teaches the transmitting comprises: powering on a bellringer transmitter (col. 7 lines 26-30), transmitting a wake-up signal (col. 3 lines 1-12), and powering off the bellringer transmitter (col. 7 lines 7-10).

Consider claim 8, Twitchell further teaches receiving, by the one of the energy-conserving nodes, the wake-up signal (col. 3 lines 1-12); and transmitting the message, by the one of the energy-conserving nodes, responsive to receiving the wake-up signal (col. 11 lines 57-64).

Consider claim 9, Twitchell further teaches waiting a random time interval, by the one of the energy-conserving nodes, before transmitting the message (col. 9 line 44 through col. 10 line 10).

Consider claim 10, Twitchell further teaches waiting a deterministic time interval, by the one of the energy-conserving nodes, before transmitting the message (col. 9 line 44 through col. 10 line 10).

Consider claim 11, Twitchell further teaches determining, after the one of the energy-conserving nodes receives the wake-up signal, whether the one of the energy conserving nodes is to respond to the wake-up signal (col. 10 lines 29-39), wherein the one of the energy-conserving nodes performs the transmitting of the message only

when the one of the energy-conserving nodes determines that the one of the energy-conserving nodes is to respond to the wake-up signal (col. 10 lines 29-39).

Consider claim 15, Twitchell further teaches the determining whether the one of the energy-conserving nodes is to respond is based on one or more certain periods in which the one of the energy-conserving nodes is permitted to respond (col. 9 lines 44-67).

Consider claim 16, Twitchell further teaches the message comprises times when one or more of the energy-conserving nodes are available to receive data and corresponding channels on which the one or more of the energy-conserving nodes are to receive at the times (col. 9 lines 44-67).

Consider claim 20, Twitchell teaches a node configured to operate in an energy-conserving ad hoc network, the node comprising: a transceiver configured to send and receive data messages (col. 3 lines 1-12); a transmitter configured to transmit a wake-up signal (col. 3 lines 1-12); and processing logic configured to control operation of the transceiver and the transmitter (col. 3 lines 1-12), wherein the processing logic is further configured to: transmit the wake-up signal via the transmitter (col. 3 lines 1-12).

Twitchell does not explicitly show that teaches join the network using the scheduled times included in the network entry message.

In the same field of endeavor, Bender teaches join the network using the scheduled times included in the network entry message (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, join the network using the scheduled times included in the network entry message, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open connection, and allocating, to the user, communication resources corresponding to resources released based on releasing the selected open connection.

Twitchell and Bender in combination, fail to teach waiting to receive a network message one of a plurality of existing nodes in the network, receive the network entry message from the one of the plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive message.

However, Bernhardt teaches waiting to receive a network message one of a plurality of existing nodes in the network (col. 2 lines 56-67), receive the network entry message from the one of the plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive message (col. 3 lines 1-12).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bernhardt into view of Twitchell and Bender,

in order to improve the battery life of battery-powered message receivers such as pagers.

Consider claim 24, Twitchell further teaches a bellringer receiver, wherein the processing logic is further configured to cause the node to function as an existing network node after joining the network, when functioning as an existing network node, the processing logic is further configured to: receive, via the bellringer receiver, a wake up signal transmitted by another node (col. 3 lines 1-12 and col. 9 line 44 through col. 10 line 10), wait a random time interval (col. 9 line 44 through col. 10 line 10), power on the transceiver (col. 7 lines 26-30), transmit the network entry message via the transceiver (col. 3 lines 1-12), and power off the transceiver (col. 10 lines 7-10).

Consider claim 26, Twitchell teaches a machine-readable medium having instructions recorded thereon for at least one processor of a node, when the instructions are executed by the at least one processor, the at least one processor is configured to: transmit a wake-up signal when the node intends to join a network (col. 15 line 56 through col. 16 line 7).

Twitchell does not explicitly show that join the network based on the information included in the network entry message.

In the same field of endeavor, Bender teaches join the network based on the information included in the network entry message (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, join the network based on the information included in the network entry message, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open connection, and allocating, to the user, communication resources corresponding to resources released based on releasing the selected open connection.

Twitchell and Bender in combination, fail to teach powering on a main transceiver; waiting to receive a network entry message from an existing node in the network, and receive a network entry message from the existing node in the network, the network entry message including information regarding a time when at least one node in the network is available to receive messages.

However, Bernhardt teaches powering on a main transceiver (col. 1 line 57 through col. 2 line 2); waiting to receive a network entry message from an existing node in the network, and receive a network entry message from the existing node in the network (col. 2 lines 56-67), the network entry message including information regarding a time when at least one node in the network is available to receive messages (col. 3 lines 1-12).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bernhardt into view of Twitchell and Bender, in order to improve the battery life of battery-powered message receivers such as pagers.

Consider claim 27, Twitchell further teaches when the instructions are executed by the at least one processor, the at least one processor is further configured to: turn on a transmitter before the transmitting of the wake-up signal (col. 7 lines 26-30), and turn off the transmitter after the transmitting of the wake-up signal (col. 10 lines 7-10).

Consider claim 37, Twitchell teaches a node in an ad hoc network, comprising: a memory configured to store one or more time periods during which the node is available to receive (col. 9 line 44 through col. 10 line 10); a processor configured to: transmit a first wake-up signal (col. 3 lines 1-12), receive a message from a neighboring node, the message identifying one or more time periods during which the neighboring node is available to receive (col. 9 line 44 through col. 10 line 10), store the one or more time periods from the message in the memory (col. 5 lines 15-24), receive a second wake-up signal from a different node (col. 12 lines 12-16).

Twitchell does not explicitly show that transmit a message to the different node, the message including at least the one or more time periods during which the node is available to receive.

In the same field of endeavor, Bender teaches transmit a message to the different node, the message including at least the one or more time periods during which the node is available to receive (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, transmit a message to the different node, the

message including at least the one or more time periods during which the node is available to receive, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open connection, and allocating, to the user, communication resources corresponding to resources released based on releasing the selected open connection.

Twitchell and Bender in combination, fail to teach waiting to receive the message from a neighboring node, receive the message from a neighboring node, the message including information one or more time periods during which the neighboring node is available to receive messages.

However, Bernhardt teaches waiting to receive the message from a neighboring node, receive the message from a neighboring node (col. 2 lines 56-67), the message including information one or more time periods during which the neighboring node is available to receive messages (col. 3 lines 1-12).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bernhardt into view of Twitchell and Bender, in order to improve the battery life of battery-powered message receivers such as pagers.

Consider claim 38, Twitchell further teaches the message transmitted to the different node further includes the one or more time periods during which the neighboring node is available to receive (col. 14 lines 23-42).

5. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell in view of Bender and further in view of Liu (U.S. PUB. 2005/0009578).

Consider claim 30, Twitchell teaches a machine-readable medium having instructions recorded thereon for at least one processor of a node, when the instructions are executed by the at least one processor, the at least one processor is configured to: receive a wake-up signal via a bellringer receiver (col. 7 lines 26-30 and col. 16 lines 20-27).

Twitchell does not explicitly show that responsive to the receiving of the wake-up signal, transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive.

In the same field of endeavor, Bender teaches responsive to the receiving of the wake-up signal, transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, responsive to the receiving of the wake-up signal, transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open

connection, and allocating, to the user, communication resources corresponding to resources released based on releasing the selected open connection.

Twitchell and Bender in combination, fail to teach after receiving the wake-up signal, determine whether to respond to the wake-up signal based on one of a random decision, a received signal strength of the wake-up signal, a current density of the network from a point of view of the node, or one or more certain time periods during which the node is configured to respond to the received wake-up signal.

However, Liu teaches after receiving the wake-up signal, determine whether to respond to the wake-up signal based on one of a random decision, a received signal strength of the wake-up signal, a current density of the network from a point of view of the node, or one or more certain time periods during which the node is configured to respond to the received wake-up signal (page 5 [0070]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Liu into view of Twitchell and Bender, in order to provide an optimal scheduler based on a total receiving power consumption calculation and prioritizing algorithm, used in association with the Automatic Power Saving Delivery protocol for saving power in wireless local area networks, as identified in the IEEE 802.11e.

Consider claim 31, Twitchell further teaches the at least one processor is further configured to: wait a random time interval before transmitting the network entry message (col. 9 line 44 through col. 10 line 10).

6. Claims 4-6, 12-14, 21-23, 25, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell in view of Bender and Bernhardt and further in view of Balachandran et al. (U.S. PUB. 2004/0230638 hereinafter, "Balachandran").

Consider claim 4, Twitchell, Bender and Bernhardt in combination, fails to teach retransmitting the wake-up signal when a message is not received during a predefined time period.

However, Balachandran teaches retransmitting the wake-up signal when a message is not received during a predefined time period (page 1 [0007]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Balachandran into view of Twitchell, Bender and Bernhardt, in order to provide scheduling the awakening of nodes and for adaptively setting sleep periods of nodes in a synchronous multiple node ad-hoc network.

Consider claim 5, Balachandran further teaches setting the time period to a variable value (page 1 [0007]).

Consider claim 6, Balachandran further teaches setting the time period to a fixed value (page 1 [0007]).

Consider claim 12, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is a random decision (page 2 [0022]).

Consider claim 13, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is based on a received signal strength of the wake-up signal (page 2 [0011]).

Consider claim 14, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is based on an understanding of a current network density from a point of view of the one of the energy-conserving nodes (page 3 [0028]).

Consider claim 21, Balachandran further teaches the processing logic is further configured to: turn off the transmitter after transmitting the wake-up signal, and turn on the transceiver (page 1 [0007] and page 2 [0022]).

Consider claim 22, Balachandran further teaches the processing logic is further configured to: wait for reception of the network entry message after transmitting the wake-up signal (page 1 [0007]), and when a time limit is exceeded before receiving the network entry message, turn off the transceiver, wait a duration of a first time interval, turn on the transmitter (page 2 [0022]), and retransmit the wake-up signal (page 1 [0007]).

Consider claim 23, Balachandran further teaches the first time interval is a variable interval and the processing logic is further configured to: increase a length of the first time interval as a number of failed network joining attempts for the node increases (page 2 [0011]).

Consider claim 25, Balachandran further teaches the node functions as an existing node, the processing logic is further configured to: determine whether to respond to the received wake-up signal based on one of a random decision (page 2 [0022]), a received signal strength of the wake-up signal (page 2 [0011]), a current density of the network from a point of view of the node (page 3 [0028]), and one or more certain time periods during which the node is configured to respond to the received wake-up signal (page 2 [0011]).

Consider claim 35, Balachandran further teaches the receiving comprises: waiting a duration of a first time interval when the network entry message is not received after a predetermined time limit (page 1 [0007]).

7. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell in view of Bender and Bernhardt and further in view of Bahl et al. (U.S. PUB. 2004/0218580 hereinafter, "Bahl").

Consider claim 28, Twitchell, Bender and Bernhardt in combination, fails to teach at least one processor is further configured to: when the receiving of the entry message fails to occur during a predetermined time limit: wait for a duration of a first time interval, and transmit the wake-up signal.

However, Bahl teaches at least one processor is further configured to: when the receiving of the entry message fails to occur during a predetermined time limit: wait for a duration of a first time interval (page 6 [0050]), and transmit the wake-up signal (page 6 [0052]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bahl into view of Twitchell, Bender and Bernhardt, in order to provide a system and method for devices to concurrently connect to multiple networks and be synchronized during the time in which the devices stay in an ad hoc network.

Consider claim 29, Bahl further teaches the first time interval is a variable time interval and the at least one processor is further configured to:
set the first time interval to a relatively small value (page 6 [0050]), and increase the value of the first time interval as a number of failed network joining attempts increases (page 6 [0052]).

8. Claims 7 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell in view of Bender, Balachandran and Bernhardt, and further in view of Bahl et al. (U.S. PUB. 2004/0218580 hereinafter, "Bahl").

Consider claim 7, Twitchell, Bender, Balachandran and Bernhardt in combination, fails to teaches setting the time period to a relatively small value, and increasing a value of the time period as a number of failed network joining attempts increases.

However, Bahl teaches setting the time period to a relatively small value (page 6 [0050]), and increasing a value of the time period as a number of failed network joining attempts increases (page 6 [0052]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bahl into view of Twitchell, Bender, Balachandran and Bernhardt, in order to provide a system and method for devices to concurrently connect to multiple networks and be synchronized during the time in which the devices stay in an ad hoc network.

Consider claim 36, Bahl further teaches for waiting a duration of a first time interval comprises: means for setting the first time interval (page 6 [0050]), and means for increasing the first time interval as a number of failed network joining attempts increases for the node (page 6 [0052]).

Allowable Subject Matter

9. The applicant's remarks, filed on 12/31/2007, have been carefully reviewed with updated search. Consequently, reasons for allowance of claims 17-19 are set forth in according to the applicant's remarks state on page 13.

Conclusion

10. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

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Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571)272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571)272-7882882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Nguyen
Examiner
Art Unit 2618

/Nay A. Maung/
Supervisory Patent Examiner, Art
Unit 2618